Nicholas Marks

nicholasmarks2022@u.northwestern.edu – 630-886-1967 – 1717 Ridge Ave, Evanston, IL 60201

EDUCATION

Northwestern University, Evanston, IL
B.S. Mechanical Engineering – Aerospace Concentration, Minor in Spanish June 2022
GPA: 3.23/4.00

TECHNICAL SKILLS

Computer: SolidWorks, Siemens NX, Python, MATLAB, C, Arduino, git, LaTeX, Microsoft Office
Manufacturing: Filament winder, manual mill, CNC mill, lathe, 3D printing, carbon fiber manufacturing, and water jet
Language: Speaks Spanish, Spanish/English Seal of Biliteracy

HANDS-ON ENGINEERING EXPERIENCE

Launch Vehicle Team Lead - NUSTARS NASA Student Launch Team Sept 2020 - current (Rocketry club at Northwestern University)

- Leading the design and construction of the launch vehicle including material selection, component geometry based on aerodynamic simulation, payload integration, and weight allocation
- Initiated the development of in-house carbon fiber manufacturing for use in constructing rocket airframes, fins, and nose cones

Supercavitation Research Project - NUSTARS 2020 Summer Research Grant

- Developed, simulated, prototyped, and tested multiple projectiles of various geometries to capture the supercavitation effect on video

Chief Engineer - NUSTARS Foundation Rocketry Team Sept 2019 - May 2020

- Lead the team to design and build a rocket to compete in a competition against other universities

RESEARCH EXPERIENCE

Northwestern University, Department of Physics and Astronomy, *Evanston, IL*
X-Ray Optics Researcher, Prof. Melville Ulmer's Team (Summer 2019 and 2020)

- Developing adaptive optics technology for use in creating deformable telescope mirrors
- Improved efficiency in data analysis by writing a host of robust, well documented MATLAB programs that can continue to be utilized in the future
- Streamlined the training process of new researchers by creating a manual that explains how to use the wavefront sensor, MATLAB analysis tools, and more, all in easy-to-understand language

Publications

Melville P. Ulmer, Mohammadreza Jalilvand, **Nicholas A. Marks** et al., "The prospects for applying magnetic smart materials combined with shape memory alloys to produce correctable and deployable space telescopes", Proc. SPIE 11451, Advances in Optical and Mechanical Technologies for Telescopes and Instrumentation IV, 114511X (16 December 2020); https://doi.org/10.1117/12.2564726

COURSE PROJECTS

Mechanical Engineering 399 – Independent Study: Reaction wheel for rocket roll control

- Designed, built, and tested a reaction wheel capable of effectively controlling a rocket about its roll axis.